

Department of Mathematics
University of Houston

Scientific Computing Seminar

Prof. Alan Demlow
Department of Mathematics
Texas A&M University

A finite element method for the surface Stokes equation

Thursday, March 5, 2020
1:30 PM- 2:30 PM
Room 646 PGH

Abstract: The surface Stokes system is used to model fluid flow on surfaces. Discretization of this system presents some challenges not present in its Euclidean counterpart. We present a divergence-conforming interior penalty method which addresses two of these issues. The first is a lack of conforming finite element methods for this system due to the need to enforce tangentiality of the fluid velocity field. The second is the presence of degenerate modes (Killing fields). Killing fields are a finite-dimensional space of vector fields tangent to the surface which correspond to rigid motions (rotational symmetries) of the surface. The dimension of this space thus may change with small perturbations of the surface.